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WBC count

How the Test is Performed:
Adult or child:
Blood is drawn from a vein (venipuncture), usually from the inside of the elbow or the back of the hand. The puncture site is cleaned with antiseptic, and a tourniquet (an elastic band) or blood pressure cuff is placed around the upper arm to apply pressure and restrict blood flow through the vein. This causes veins below the tourniquet to distend (fill with blood). A needle is inserted into the vein, and the blood is collected in an air-tight vial or a syringe. During the procedure, the tourniquet is removed to restore circulation. Once the blood has been collected, the needle is removed, and the puncture site is covered to stop any bleeding .

Infant or young child:
The area is cleansed with antiseptic and punctured with a sharp needle or a lancet. The blood may be collected in a pipette (small glass tube), on a slide, onto a test strip, or into a small container. Cotton or a bandage may be applied to the puncture site if there is any continued bleeding.

How to Prepare:
Adults:
No special preparation is necessary.

Infants and children:
The physical and psychological preparation you can provide for this or any test or procedure depends on your child's age, interests, previous experience, and level of trust. For specific information regarding how you can prepare your child, see the following topics as they correspond to your child's age:

- infant test or procedure preparation (birth to 1 year)
- toddler test or procedure preparation (1 to 3 years)
- preschooler test or procedure preparation (3 to 6 years)
- schoolage test or procedure preparation (6 to 12 years)
- adolescent test or procedure preparation (12 to 18 years)

How it Feels:
When the needle is inserted to draw blood, some people feel moderate pain, while others feel only a prick or stinging sensation. Afterward, there may be some throbbing.

Risks:
Risks associated with venipuncture are slight:

- excessive bleeding
- fainting or feeling lightheaded
- hematoma (blood accumulating under the skin)
- infection (a slight risk any time the skin is broken)
- multiple punctures to locate veins

Normal Values:
WBC: 4,500 to 10,000 cells/mcl

Note: cells/mcl = cells per microliter

Abnormal Results:
Low numbers of WBCs (leukopenia) may indicate:

- bone marrow failure (for example, due to granuloma (granular tumor), tumor, fibrosis)
- presence of cytotoxic substance
- collagen-vascular diseases (such as lupus erythematosus)
- disease of the liver or spleen
- radiation

High numbers of WBCs (leukocytosis) may indicate:

- infectious diseases
- inflammatory disease (such as rheumatoid arthritis or allergy)
- leukemia
- severe emotional or physical stress
- tissue damage (for example, burns)

Additional conditions under which the test may be performed:

- abortion, spontaneous
- abortion, threatened
- acute appendicitis
- acute cholecystitis
- acute lymphocytic leukemia
- acute nonlymphocytic leukemia (AML)
- acute pancreatitis
- acute pulmonary eosinophilia (Loeffler's syndrome)
- allergy to mold, dander, dust
- amebic liver abscess
- atypical pneumonia
- cellulitis
- cholangitis
- chronic bilateral obstructive uropathy
- chronic lymphocytic leukemia (CLL)
- chronic myelogenous leukemia (CML)
- chronic symptomatic HIV infection
- Colorado tick fever

- ectopic pregnancy
- endometritis
- epiglottitis
- erysipelas
- Guillain-Barre
- hairy cell leukemia
- herpes zoster
- Immunodeficiency disorders
- Legionnaire's disease
- multiple myeloma
- necrotizing enterocolitis
- osteomyelitis
- paroxysmal nocturnal hemoglobinuria (PNH)
- pelvic inflammatory disease (PID)
- pericarditis
- pericarditis; bacterial
- pericarditis; post-MI
- pernicious anemia
- pertussis
- polycythemia vera
- primary myelofibrosis
- rheumatic fever
- sepsis
- acute sinusitis
- skin lesion of blastomycosis
- toxic megacolon
- toxic shock syndrome
- Wilson's disease

Cost:
The costs are:

- $44 for the CSF cell count test
- $52 for the pleural fluid analysis
- $15 for the serial blood CBC or complete CBC test

Special Considerations:
There are various types of white blood cells (WBCs) that normally appear in the blood: neutrophils (polymorphonuclear leukocytes; PMNs), band cells (slightly immature neutrophils), T-type lymphocytes (T cells), B-type lymphocytes (B cells), monocytes, eosinophils, and basophils. Any infection or acute stress will result in an increased production of WBCs. This usually entails increased numbers of cells and an increase in the percentage of immature cells (mainly band cells) in the blood. This change is referred to as a "shift to the left".

Interfering factors:
Acute emotional or physical stress can increase WBC counts.

People who have had a splenectomy have a persistent mild elevation of WBCs.

Drugs that may increase WBC counts include epinephrine, allopurinol, aspirin, chloroform, heparin, quinine, corticosteroids, and triamterene.

Drugs that may decrease WBC counts include antibiotics, anticonvulsants, antihistamine, antithyroid drugs, arsenicals, barbiturates, chemotherapeutic agents, diuretics and sulfonamides.

Veins and arteries vary in size from one patient to another and from one side of the body to the other. Obtaining a blood sample from some people may be more difficult than from others.

Basophils are a specific type of white blood cell. These cells are readily stained with basic dyes (this is where the name comes from). Note the dark grains inside the cellular fluid (cytoplasm) of this basophil. Basophils make up only a small portion of the number of white blood cells but are important parts of the body's immune response. They release histamine and other chemicals that act on the blood vessels when the immune response is triggered.